



Trap crops for management of beetle pests in field beans

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Background

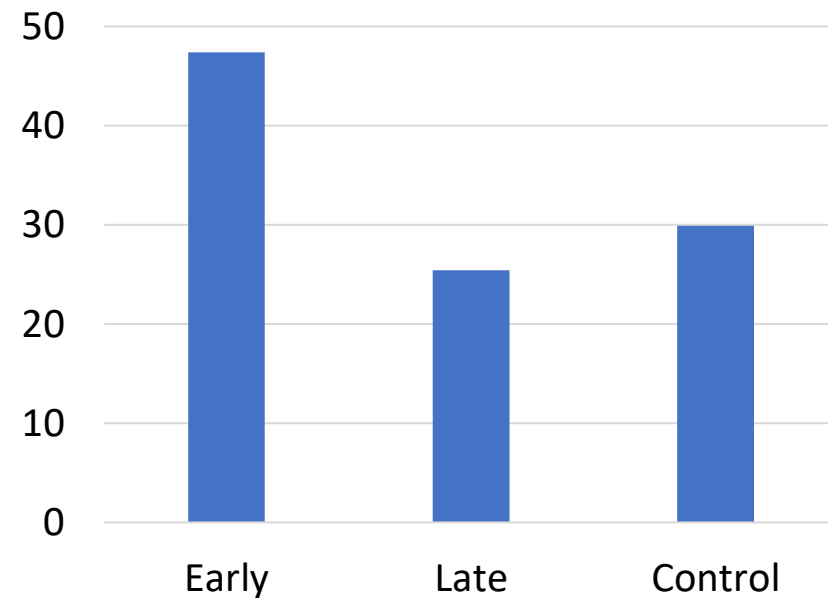


- Optibean project showed that earlier sown beans were more damaged than later sown beans.

- Early sown 29th January
- Later sown 25th February
- Control sown 25th February

- Poor control of bruchids by insecticides.
- 2019 investigation showed that an earlier sown area had the possibility of controlling bruchid populations.

% bruchid damage



Ekhaga 2021 - 3 sites

- 3 fields which had different approaches to insecticide usage and trap cropping arrangements

A – One side of field had long term legume rich pasture as the trap crop - regenerative farming, no insecticides.

B - Another had July sown lucerne – insecticides only if required.

C - The final field had a strip of Jan sown spring beans –integrated farm management using conventional spray programme.

- No insecticides applied in 2021

A



B



C



Site layout for conventional farming system



- In the trap crop, 40 bait stations containing a trap for weevil (pheromone lure) and one for bruchid (plant volatile).
- 5 sample transects A-E
 - Trap crop
 - 5m
 - 10m
 - 20m
 - 50m



Measurements



- Pest damage
 - Establishment counts
 - Weevil notching
 - Weevil emergence traps – for next generation
 - Bruchid damage



- Biodiversity monitoring
 - Pitfall traps
 - Sweep netting



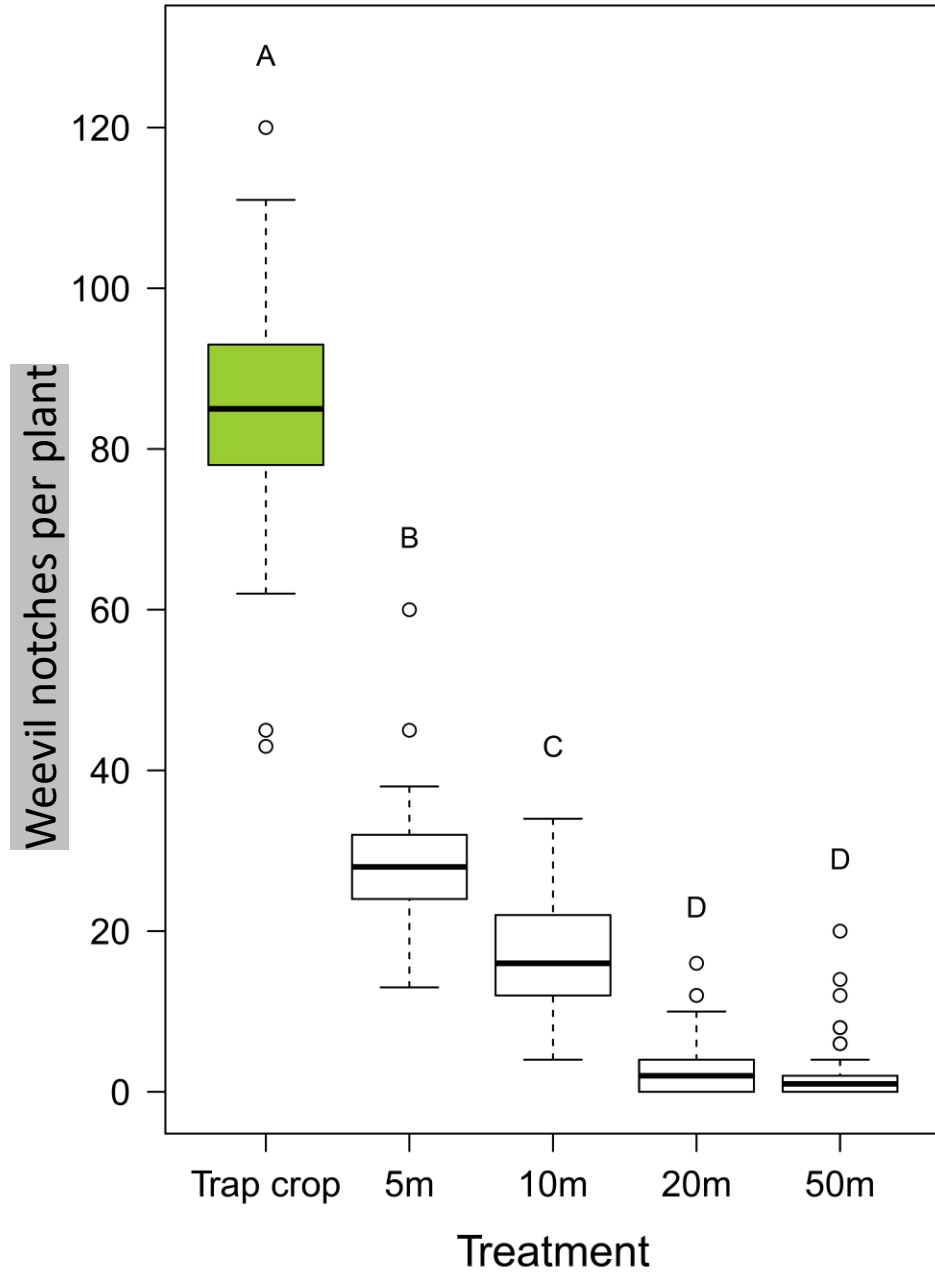
Weevil notch damage – Site C conventional farming system



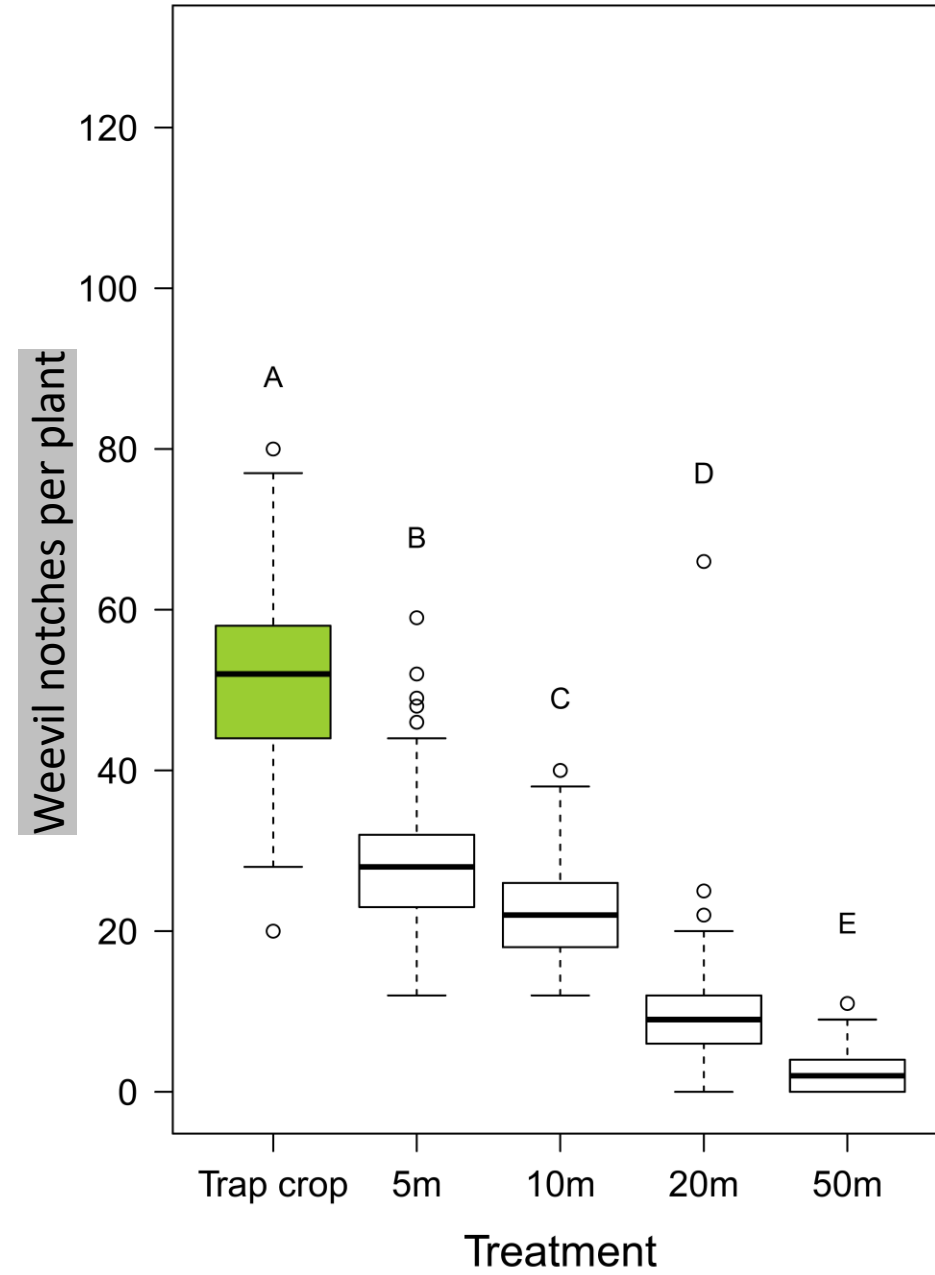
	A	B	C	D	E	
4	1.5	1.0	1.4	1.3	1.4	
3	2.6	1.6	3.4	3.7	1.5	
2	6.1	4.0	7.5	5.5	1.7	
1	7.9	7.3	10.1	8	5.3	Field 9 no lures
Trap crop Jan sown SB →	31.7	24.8	28.6	29.6	24.6	

	A	B	C	D	E	
4	1.7	1.7	2.7	4.4	2.3	
3	8.6	6.9	10.2	8.8	10.7	
2	17.6	16.0	18.5	20.7	22.9	
1	22.7	26.7	27.8	26.9	28.6	Field 10 with Lures
Trap crop Jan sown SB →	52.2	56.1	56.6	60.1	63.4	

Field 10: 29/04/21



Field 10: 12/05/21



Bruchid damage in harvested beans in conventional farming system



	A	B	C	D	E
4	10.8	20.2	21.6	17.7	21.2
3	3.7	9.1	15.4	23.0	19.4
2	21.8	6.2	14.5	15.0	15.5
1	19.0	9.9	11.8	19.5	24.1
Trap crop Jan sown SB →	55.9	37.1	32.5	50	44.5

	A	B	C	D	E
4	7	21.4	9.7	15.1	13.5
3	12.0	15.1	12.8	17.1	22.5
2	27.3	25.6	17.6	9.8	30.5
1	14.9	17.2	19.7	27.2	30.9
Trap crop Jan sown SB →	44.6	38.3	35.1	45.0	51.2

Field 9 no lures

	Field 9	Field 10
Field	16	18
Trap crop	44	42

Field 10 with Lures

Biodiversity - pest pressure comparing farming systems



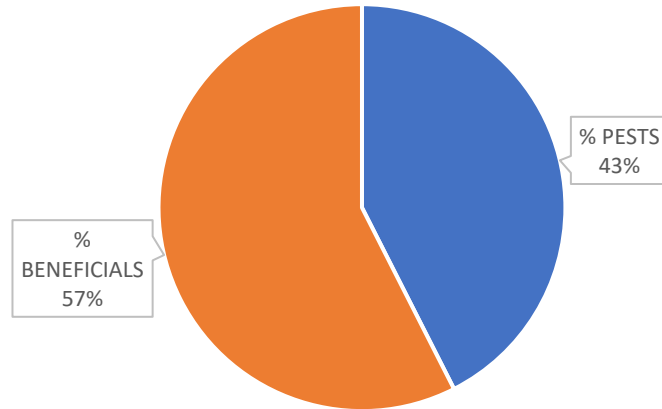
- Biodiversity not linked to trap crop
- Linked to Farming system or landscape

Site	Crop	Trap crop	Average no weevil notches across field per plant	Average amount of Bruchid damage %
A	SB	Long term legume rich field margin	6	11
B	WB	Mixture of lucerne and wild bird seed mix (HLS)	20	13
C	SB	Spring beans sown in Jan	23	23

Pests vs Beneficials for all sites

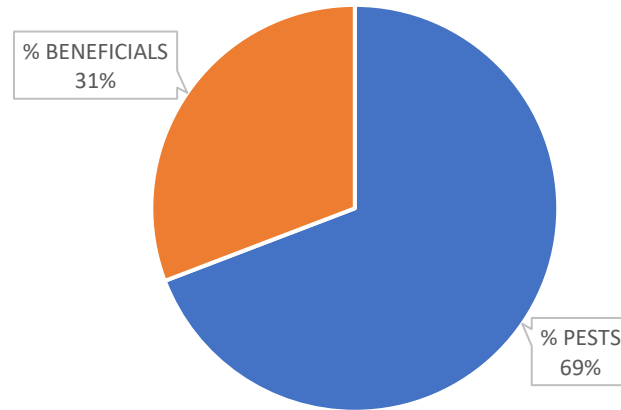


Site A, Sweep netting



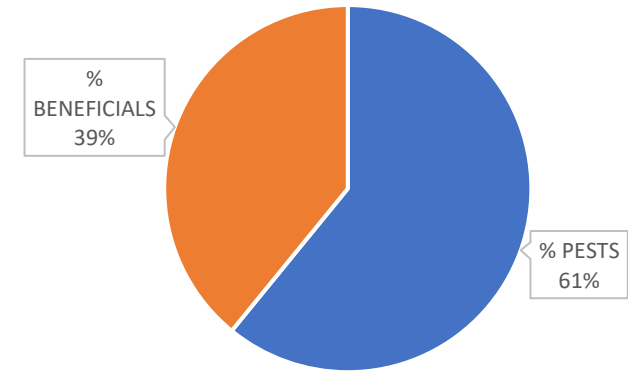
■ % PESTS ■ % BENEFICIALS

Site B, Sweep netting



■ % PESTS ■ % BENEFICIALS

Site C, sweep netting



■ % PESTS ■ % BENEFICIALS



Looking ahead



- More focus on farming system A and C.
- Targeted aphid and disease assessments.
- Evaluating effect of the trap crop further into the field - 100m.
- More comparison against standard crops (no trap crop) within the same farm.
- Selective spraying within Farming system C, targeting bruchid control.

Thank you to our growers in 2021



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